on popular astronomy, however accurate it may be in detail. No doubt it is always difficult to know what to omit when space is severely limited, but if the book is to attract the attention of those who are unacquainted with astronomical literature, we suggest that the object would be more likely to be attained if the author had devoted some space to the methods and results of spectroscopic observation. By practically ignoring this large section, he has neglected perhaps the best means of exciting the scientific imagination and awakening an intelligent curiosity in celestial phenomena.

Introduction to Physical Chemistry. By Prof. H. C. Jones. Pp. xv+279. (New York: The Macmillan Company; London: Macmillan and Co., Ltd., 1910.) Price 1.60 dollars net.

IN this book the author gives a rapid sketch of what is ordinarily known as physical chemistry. Compared with other books of its kind, the result can scarcely be described as satisfactory. The author has tried to cover too much ground in the allotted space, with the result that much of the information is of a fragmentary character. The book is evidently intended for junior students, but it is doubtful whether they would really get any grasp of fundamental principles from such a highly condensed account of physical chemistry.

There are many places where the author's statements are vague, if not erroneous. For example, when discussing solids, he says, "The density of solids is somewhat greater than that of liquids, and much greater than that of gases. This is just what we should expect, since the solid state represents matter in its most condensed form." The second sentence is quite misleading. Again, "Ozone seems to be stable below 200° and above 1000°." Prof. H. C. Jones is a zealous and energetic worker in the field of physical chemistry, and the reviewer would like to have been able to accord this book a hearty welcome. As it is, he feels bound to say that, although it may serve a useful purpose, there are, in his opinion, better works of a similar character already in existence.

Preliminary Physiology. By W. Narramore. Pp. xix+220. (London: Methuen and Co., Ltd., 1910.) Price 3*s.* 6*d.*

THIS little book will be mainly useful to school teachers and to junior students preparing for the first-stage examinations of the Board of Education. This class of reader has but little preliminary anatomical knowledge, and the bulk of Mr. Narramore's book is occupied with filling up this gap. There are many other excellent books of the same nature, but the chief merits of the present volume are—(1) it is correct so far as it goes, and it is admittedly of the most elementary nature, and (2) it is provided with excellent illustrations. The author recognises that books and pictures will never teach properly even the elements of an experimental science, and insists that practical work must accompany the course. One can only hope that this expression of opinion will bear fruit. So far as one's experience of the schoolmaster goes, it is just that practical element in his scientific training which is usually conspicuous by its absence.

W. D. H.

The Invicta Table Book. By J. W. Ladner. Pp. 18. (London: George Philip and Son, Ltd., n.d.) Price 2*d.*

GRAPHIC representations of the multiplication tables and of the commoner weights and measures—including the metric system—are provided, and these should prove very useful in schools where the compiler's number scheme is adopted.

LETTERS TO THE EDITOR.

[*The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of* NATURE. *No notice is taken of anonymous communications.*]

The Jodrell Laboratory at Kew.

THE award of a Royal medal to Prof. F. O. Bower for his long-continued researches in the vascular cryptogams suggests to me that it may not be inappropriate to put on record an anecdote in our scientific history in the last century.

In the fourth report of the Commission on Scientific Instruction and the Advancement of Science it was recommended (paragraphs 57 and 154) "that opportunities for the pursuit of investigations in Physiological Botany should be afforded in the Royal Gardens at Kew."

To this the Government paid as little attention as it usually does to the results of the labours of Royal Commissions. But the recommendation was not wholly fruitless, for it induced the late T. J. Phillips Jodrell, a personal friend of Sir Joseph Hooker, to offer to build and equip, at an expense of 1500*l.*, a modest laboratory for the purpose. As stated in the Kew report for 1874, it was originally intended that this should be associated with an extension of the herbarium building which was contemplated at the time; but in consideration of the risk of fire it was decided to have an isolated building contiguous to the propagating department of the establishment.

It was completed in 1876, and was first occupied by Prof. Tyndall for work on the putrefactive changes produced by bacteria, the results of which were published in the Phil. Trans. for the following year.

Since then the stream of research has continued steadily. I "handed in" to the "Botanical Work Committee" appointed by the Treasury in 1900 a list of published papers as the result of work done in the laboratory down to and inclusive of that year, and compiled from copies preserved in it.

The workers in the Jodrell Laboratory are, of course, independent. They are supplied with the material they require, and are at liberty to make use of the Kew library and to consult, if they care to do so, the scientific staff. The nature of the work has therefore been of the most varied kind, and does not represent the influence of any particular school. In this respect the outcome differs from that of an academic laboratory in which research is carried on under the direction, or at any rate with the aid of, the professor.

What I think is worth noting is that, of those who have worked in the Jodrell Laboratory during the fifteen years from 1876 to 1900, no fewer than six have subsequently received the Royal medal. I do not mean to say that it has been in each case wholly earned at Kew, but it is I think clear that the work done there has contributed to the result.

The following are the names, with the general scope of the research and the date of the award:—Burdon Sanderson, electromotive properties of Dionæa, 1883; Marshall Ward, embryology and mycology, 1893; Gardiner, continuity of protoplasm, 1898; Horace Brown, assimilation of carbon, 1903; Scott, fossil botany, 1906; Bower, morphology of vascular cryptogams, 1910. To these may be added, making in all seven medallists, the Davy medal awarded to Schunck in 1899, in part for his researches on chlorophyll.

When one considers the names the results are not surprising, and though Kew enjoys some measure of prestige from being associated with them, that association is to a large extent accidental, at any rate limited to affording facilities. But some conclusions may be drawn. In the first place, the prevision of the Royal Commission is amply justified. In the next place, Phillips Jodrell, were he alive, would have every reason to be satisfied with the outcome of his generosity. But there is a further and more important point. I do not contend that the work I have enumerated was necessarily bound up with the Jodrell Laboratory in the sense that it could not have

been accomplished elsewhere, as, indeed, much of it has been continued. Of course, the medallists were all picked men, who did not lightly embark on research demanding much time and labour without a good deal of previous consideration. I think it may be fairly concluded that the provision of facilities with a sympathetic atmosphere may have operated as a determining influence. The final moral of the story may be summed up as the "open door."

And this applies elsewhere. The mathematician only requires his study. The physicist and the chemist are rarely at a loss for opportunity of research. But the position of the biologist is different. He must go to his material. Such institutions, therefore, as the Rothamsted Experimental Station, the Plymouth Laboratory of the Marine Biological Association, and the Biological Station at Naples, are peculiarly deserving of public support. And I think the story of the Jodrell Laboratory affords tolerable ground for the presumption, if, indeed, other experience did not afford it, that the generosity of those who have money to spare will not be fruitless in results if extended to institutions of the kind.

I cannot, however, omit to notice one piece of devoted service to the interests of the laboratory which, of its kind, is almost unique. A quarter of a century ago the Government looked with more indifference on research than happily it does at present. It merely acquiesced, with little interest, in a laboratory being provided at Kew from private funds. It was hopeless at the time to obtain for it any public financial support. Posterity will almost think it incredible that from 1892 to 1906 Kew should have had to owe to the present president of the Linnean Society, Dr. Dukinfield Scott, the unpaid performance of the duties of keeper. Such unrequited devotion has scarcely received the recognition it deserves. Fortunately, the utility of the laboratory as a necessary element in the Kew establishment has become sufficiently evident, and the keeper is now a member of the paid staff.

Witcombe. W. T. THISELTON-DYER.

Eel-larvæ (*Leptocephalus brevirostris*) from the Central North Atlantic [1]

IN a previous article in NATURE (November 10) I have given some information about the expedition executed by the steamer *Michael Sars* in the North Atlantic, from April to August this year, under the superintendence of Sir John Murray and myself. As would be seen from that article, the expedition crossed the Atlantic twice, first from the Canaries to Newfoundland, and then from Newfoundland to Ireland. During this cruise many hauls were made with pelagic tow-nets and trawls. It is characteristic of the manner of work that many nets and trawls —as many as ten—were towed simultaneously during several hours at each station. The nets and trawls were fixed on the wire as follows: one at the surface, the others at 100, 200, 300, 600, 1000, 1500, 2000, 2500, and 3000 metres. The very considerable number of pelagic forms captured is now being examined. The material includes several hundred Leptocephali belonging to many different species. Among these are forty-four larvæ of the common eel (*Leptocephalus brevirostris*). The localities where these were found are so interesting that a preliminary note may be useful, as suggestive for further investigation.

The accompanying chart (Fig. 1) shows the stations at

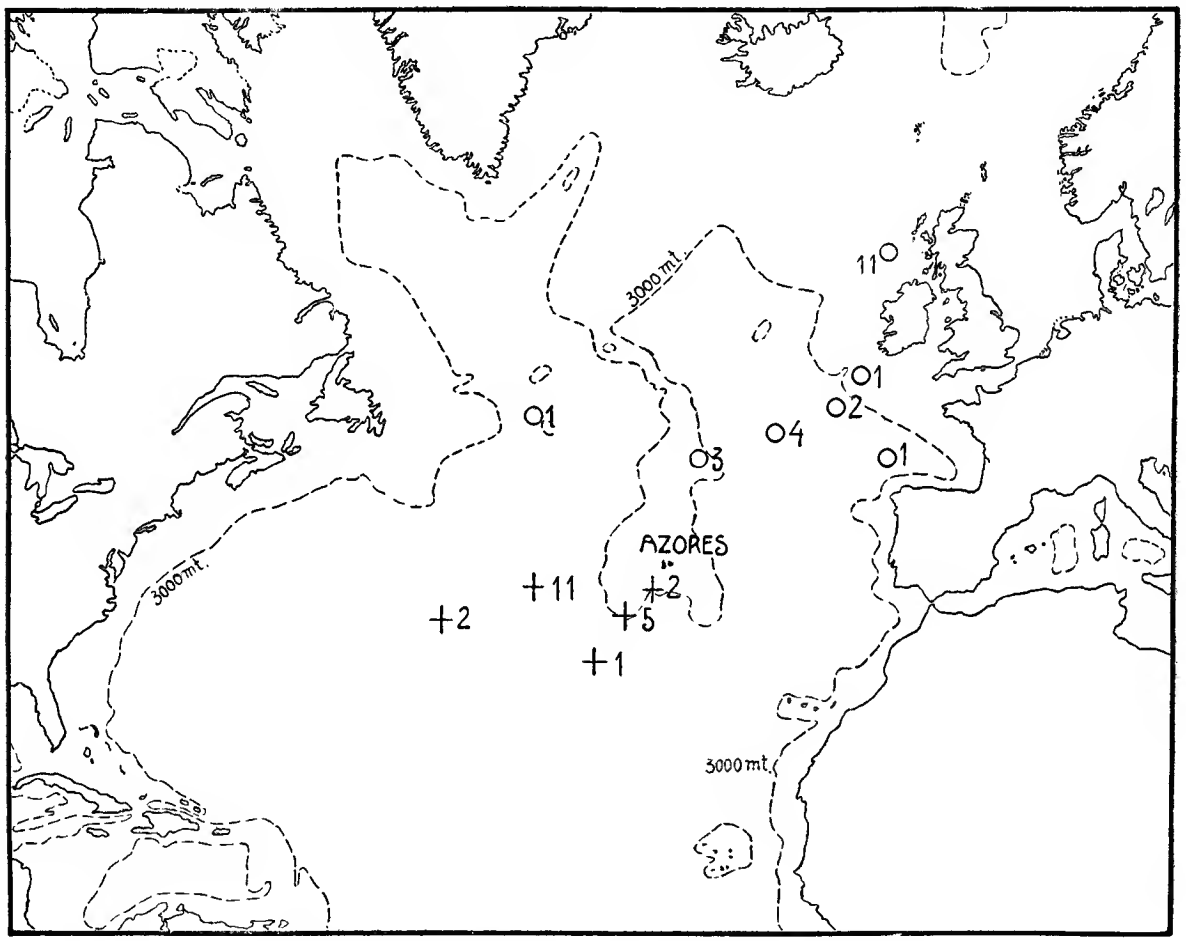

FIG. 1.—Chart showing places where eel-larvæ were found, and the number caught.

[1] Communication from the *Michael Sars* North Atlantic Deep-sea Expedition, 1910.